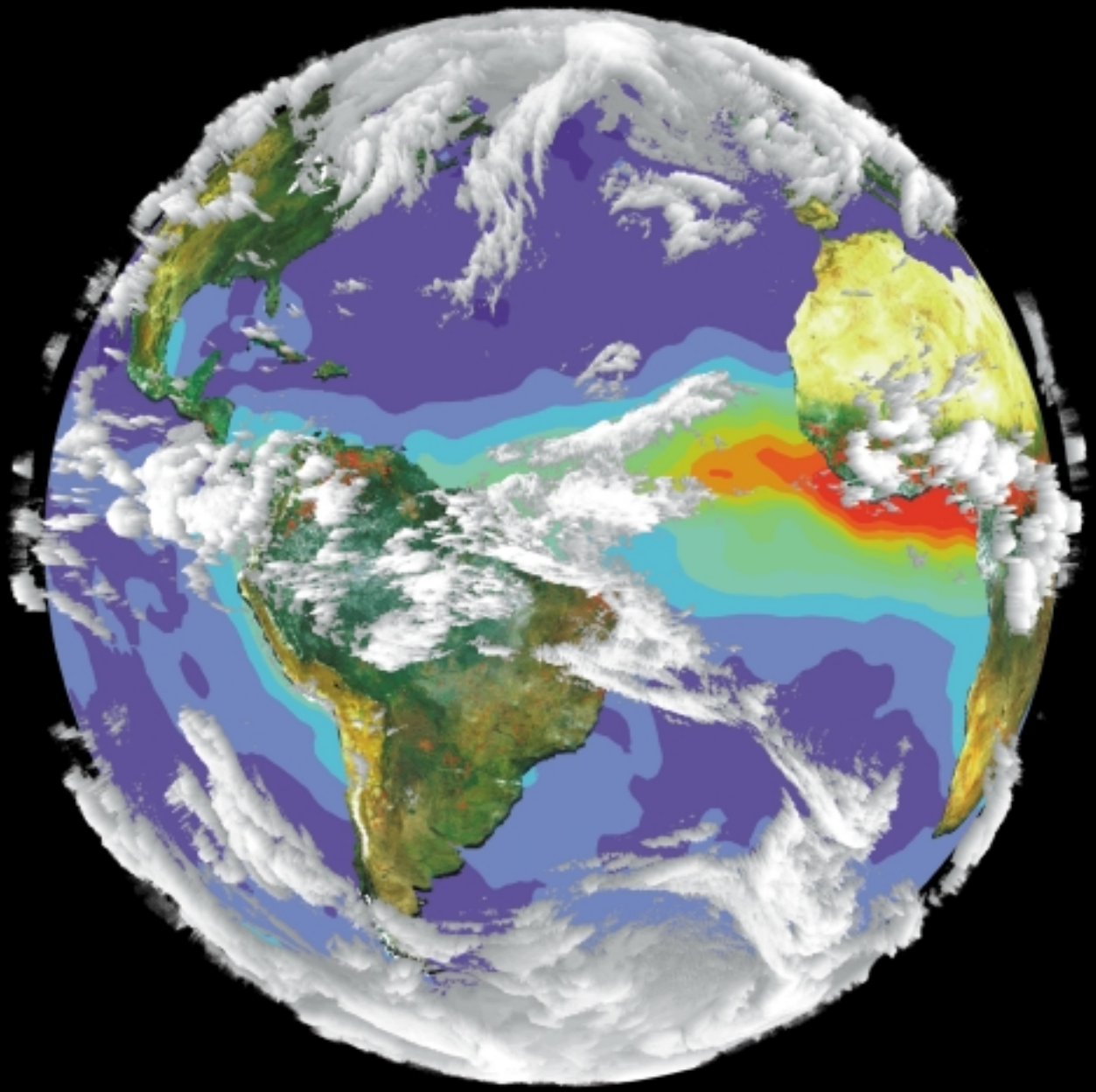

How do the Earth's land, water, air, and life interact to produce our fragile environment?

This Earth image is a compilation of data from several different satellites that remotely sense vegetation, clouds, fires over land, and aerosols over the ocean.

We understand some facets of our environment fairly well: short-term weather forecasts, basic hurricane tracking, and detecting changes on the Earth's surface. However, much critical information is missing: we cannot predict how the climate will shift a year from now, and what the effects will be on people whose livelihoods depend on that climate, from farmers to urban planners.

NASA's Earth Science Enterprise captures our spirit of exploration and focuses it on the Earth. NASA and its inter-agency and international partners are striving to discover patterns in climate which will allow us to predict and respond to environmental events—such as floods and severe winters—well in advance of their occurrence. Nations, regions, and individuals can then apply this knowledge in preparation of these events, and likely save countless lives and resources.

A New Approach: Studying the Earth's Interconnections

Our research addresses a fundamental scientific challenge: how do the Earth's land, water, air, and life interact to produce the environment in which we live? Scientist believe that understanding how each of these elements are linked to one another will provide the "user's guide" for our planet. Working with researchers in universities, industry, and other state and Federal agencies through the U.S. Global Change Research Program, we are addressing some of the most important questions regarding global environmental change.

NASA's Unique Contribution: The View From Above

NASA has answered the call to provide a unique service: cutting-edge observations from space. The perspective from space is critical. Only from above can we observe and monitor places where it is impossible (or very difficult) to make close observations—such as distant parts of the world's oceans, deserts, and polar regions. Using this "big picture," scientists can then build computer models that simulate how the Earth behaves. More importantly, they can use this global understanding to focus on what people care about most: what is happening in their state or region.

A Wide Range of Benefits Flow From Good Science

Both practical benefits and long-term understanding of the environment flow from the same high-quality science that forms the foundation for the Earth Science Enterprise. Using data from satellites, aircraft, balloons, and ground research, scientists and other users around the world will use this information to:

- Dramatically improve weather forecasts, thus improving agricultural and natural resources productivity;
- Understand the causes and patterns of natural disasters (floods, hurricanes, etc.,) and how to respond to them;
- Improve efficiency in the use of agricultural chemicals, reducing pollution and increasing crop productivity;
- Provide the facts needed to make objective decisions about the environment; and
- Support the development of a new high-tech, commercial remote-sensing industry in the United States that could contribute significantly to our economy and trade balance.

We've Already Made Excellent Progress—With Much More to Come

NASA research and observations are already helping other professionals and citizens manage the Earth's natural resources. Examples include:

- Management of Chesapeake Bay coastal marshes, which support the seafood industry and protect water fowl and shorelines;
- Improving crop monitoring capability, health, and yield for California's wine industry;
- Providing the means for sustainable agriculture in Kansas by studying crop yields and irrigation patterns;
- Performing fire hazard assessments, pollution runoff analyses, and electric power demand predictions for Regional Planners;
- Identifying and tracking dangerous brush fires in western states;
- Monitoring the Earth's ozone layer, which protects living things from harmful ultraviolet radiation; and
- Improving the predictions of extreme "El Niño" climate events and the effects they will have on U.S. and global weather patterns.

Getting Information to People Is the Key

Additional information on Earth Science Enterprise mission results, research opportunities, and educational resources can be obtained via the World Wide Web at: http://www.earth.nasa.gov or by sending written inquiries to: Public Affairs, Code P, NASA Headquarters, Washington, DC 20546-0001.

About the Image

The land image layer was generated by the SeaWiFS Project at NASA Goddard Space Flight Center and is a true color (blue-green-red) composite of land vegetation for cloud-free conditions from September 18-October 3, 1997. Each red dot over South America and Africa represents a fire location detected by the Advanced Very High Resolution Radiometer (AVHRR) in January 1993. This data was obtained from the European Space Agency's (ESA) Fire Atlas. The oceanic aerosol layer is based on the National Oceanic and Atmospheric Administration's National Environmental Satellite Data and Information Service (NOAA-NESDIS) AVHRR aerosol data product for December, January and February 1990 and 1991. The aerosol layer is a result of biomass burning and windblown dust emitted over Africa (red - high concentration; purple - low concentration). The cloud layer is a composite of infrared images from four geostationary weather satellites; GOES 8, GOES 9 (NOAA), METEOSAT (ESA) and GMS 5 (Japan), for September 17,1997 produced by the Univ. of Wisconsin's Space Science and Engineering Center. Image by R.B. Husar, Washington University.